WHAT IS CLAIMED IS:

1. A negative feedback amplifier for a transmitter, comprising:

a vector corrector for correcting at least one of a phase and an amplitude of an in-phase component and a quadrature component of an input baseband signal containing data to be transmitted and outputting said corrected one;

adder for adding a feedback signal of said in-phase component to said in-phase component of an output from said vector corrector and a feedback signal of said quadrature component to said quadrature component of said output from said vector corrector, respectively;

a modulator for orthogonally modulating said in-phase components and said quadrature components of outputs of said adder;

a power amplifier for amplifying an output of said modulator;

a demodulator for orthogonally demodulating a part of an output of said power amplifier and outputting said feedback signals of said in-phase component and said quadrature component; and

said vector corrector serving to perform a correcting operation of canceling an error of at least one of the phase and the amplitude of said in-phase component and said quadrature component occurring in said demodulator.

2. A negative feedback amplifier as claimed in claim 1, further comprising a memory for storing a value indicating an error of at least one of the phase and the amplitude to be used for said correcting operation.

3. A negative feedback amplifier as claimed in claim 2, further comprising means for providing said vector corrector with any error correction value to be given by an external device.

4. A negative feedback amplifier as claimed in claim 1, further comprising an error detecting unit, wherein when testing signals of the in-phase component and the quadrature component having a predetermined phase and amplitude is provided as said input baseband signal to said negative feedback amplifier, said error detecting unit performes a phase and amplitude comparisons between the in-phase component between said adders and said modulator and the in-phase component of said testing signal and between the quadrature component therebetween and the quadrature component thereof, and detects at least one of the phase error and the amplitude error by said comparison.

5. A negative feedback amplifier as claimed in claim 4, wherein said testing signal is a signal composed of a predetermined pattern, located at predetermined positions in the input baseband signal containing said data to be transmitted.

6. A negative feedback amplifier as claimed in

claim 5, further comprising means for generating a signal for indicating a timing of said testing signal located at predetermined positions in said input baseband signal, and wherein said error correcting unit responds to a generation of said signal indicating the timing of said testing signal and reads the in-phase component and the quadrature component located between said adder and said modulator.

7. A negative feedback amplifier as claimed in claim 1, wherein assuming that the in-phase component of said input baseband signal is I, the quadrature component thereof is Q, the phase error is δ, and the amplitude error is κ, said vector corrector operates to correct said phase error and said amplitude error by the following expression of:

$$Ic = I + \alpha Q$$
$$Qc = \beta Q$$

wherein $\alpha = -\tan\delta$ and $\beta = 1/(\kappa\cos\delta)$ and then to output the corrected in-phase component Ic and the corrected quadrature component Qc.

8. A transmitter comprising:

a baseband signal generating unit for generating an in-phase component and a quadrature component of a baseband signal containing data to be transmitted; and

a transmitting unit for modulating said data

and thereby generating a transmission signal, based on the in-phase component and the quadrature component of said baseband signal sent from said baseband signal generating unit, and

said transmitting unit including;

a vector corrector for correcting at least one of a phase and an amplitude of the in-phase component and the quadrature component of said baseband signal sent from said baseband signal generating unit,

adder for adding the in-phase component and the quadrature component of the output of said vector corrector to feedback signals of said in-phase component and said quadrature component, respectively,

a modulator for orthogonally modulating the in-phase components and the quadrature components of outputs of said adder,

a power amplifier for amplifying an output of said modulator,

a demodulator for orthogonally demodulating a part of an output of said power amplifier and outputting said feedback signal of the in-phase component and the quadrature component, and

said vector corrector serving to perform a correcting operation of canceling an error of at least one of the phase and the amplitude of the in-phase component and the quadrature component occurring in said demodulator.

9. A transmitter as claimed in claim 8, wherein

said negative feedback amplifier further comprises a memory for storing a value indicating an error of at least one of the phase and the amplitude to be used for said correcting operation.

10. A transmitter as claimed in claim 9, wherein said negative feedback amplifier further comprises means for providing any error correction value to be given from an external device to said vector corrector.

11. A transmitter as claimed in claim 8, wherein said negative feedback amplifier further comprises an error detecting unit, when a testing signal of the in-phase component and the quadrature component having a predetermined phase and amplitude values is provided as said input baseband signal to said negative feedback amplifier, said error detecting unit performes a phase and an amplitude comparison between the in-phase component between said adders and said modulator and the in-phase component of said testing signal and between the quadrature component therebetween and the quadrature component thereof, and detects at least one of a phase error and an amplitude error based on the compared results.

12. A transmitter as claimed in claim 11, wherein in said negative feedback amplifier, said testing signal is a signal of a predetermined pattern located at predetermined positions in said input baseband signal containing said data to be transmitted.

13. A transmitter as claimed in claim 12, wherein

said negative feedback amplifier further comprises means for generating a signal indicating each timing of said testing signals located at predetermined positions in said input baseband signal, and said error detecting unit reads the in-phase component and the quadrature component between said adder and said modulator in response to a generation of said signal indicating each timing of said testing signals.

14. A transmitter as claimed in claim 8, wherein in said negative feedback amplifier, assuming that the in-phase component of said input baseband signal is I, the quadrature component thereof is Q, said phase error is δ, and said amplitude error is κ, said vector corrector operates to correct said phase error and amplitude error by the following expressions:

$$Ic = I + \alpha Q$$

$$Qc = \beta Q$$

wherein $\alpha = -\tan\delta$ and $\beta = 1/(\kappa\cos\delta)$ and then to output the corrected in-phase component Ic and the corrected quadrature component Qc.

15. A method of correcting errors of a phase and an amplitude of a negative feedback amplifier included in a transmitter, comprising the steps of:

vector-correcting at least one of a phase and an amplitude of an in-phase component and a quadrature component of an input baseband signal containing data

to be transmitted;

adding feedback signals of the in-phase component and the quadrature component to the corrected in-phase component and quadrature component, respectively;

orthogonally modulating said in-phase component and said quadrature component to which said feedback signals are added;

amplifying said orthogonally modulated signals;

orthogonally demodulating a part of said each amplified signal and then outputting said feedback signals of the in-phase component and the quadrature component;

in said correcting step, performing a correcting operation of canceling an error of at least one of the phase and amplitude of the in-phase component and the quadrature component occurring in said demodulator.

16. A method as claimed in claim 15, further comprising the step of storing in a memory a value indicating an error of at least one of the phase and the amplitude to be used for said correcting operation, and wherein said correcting operation of canceling said error is executed based on the value indicating the error stored in said memory.

17. A method as claimed in claim 16, further comprising the steps of:

connecting a test device to an input unit and an output unit of said negative feedback amplifier;

when a predetermined testing signal is inputted from said test device to the input unit of said negative feedback amplifier, causing said test device to detect an error of at least one of the phase and the amplitude of the in-phase component and the quadrature component occurring in said demodulator from a signal of said output unit; and

putting a value indicating said detected error in said memory.

18. A method as claimed in claim 15, further comprising the step of, when a test signal of the in-phase component and the quadrature component having a phase and an amplitude of a predetermined value as said input baseband signal is provided to the input unit of said negative feedback amplifier, comparing the phase and the amplitude between the in-phase component between said adding step and said quadrature modulating step and the in-phase component of said testing signal and between the quadrature component therebetween and the quadrature component thereof, and detecting at least one of a phase error and an amplitude error based on the compared result.

19. A method as claimed in claim 18, wherein said testing signal is a signal located at a predetermined position in said input baseband signal containing said data to be transmitted.

20. A method as claimed in claim 19, further comprising the steps of:

generating a signal indicating a timing of said testing signal located at a predetermined position in said input baseband signal when said input baseband signal is inputted; and

reading the in-phase component and the quadrature component between said adding step and said quadrature modulating step in response to a generation of the signal indicating the timing of said testing signal.

21. A method as claimed in claim 15, wherein assuming that the in-phase component of said input baseband signal is I, the quadrature component thereof is Q, the phase error thereof is δ, and the amplitude error thereof is κ, in said vector correcting step, the operation is executed to correct said phase error and amplitude error by the following expression of:

$$Ic = I + \alpha Q$$
$$Qc = \beta Q$$

wherein $\alpha = -\tan\delta$ and $\beta = 1/(\kappa\cos\delta)$
and then to output the corrected in-phase component Ic and the corrected quadrature component Qc.